REMARKS

Claims 1-11 and 13-19 were pending and considered. Claims 1-11 and 13-19 were rejected. In response, claim 1 has been amended. Following entry of this amendment, claims 1-11 and 13-19 remain pending. Reconsideration and allowance are respectfully requested.

In the most current Office Action, the Examiner specifically indicated that previous rejections under 35 U.S.C. § 112 have been overcome, and rejections under 35 U.S.C. § 103(a) based on U.S. Patent 4,510,020 have been withdrawn. The Examiner now has rejected claims 1-11 and 13-19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,223,090 (Klungness et al.) in view of U.S. Patent 6,074,524 (Wu et al.) and U.S. Patent 6,077,396 (LaRiviere).

Klungness et al. was cited earlier in the prosecution of this application, discussed at length and distinguished. Rejections based on Klungness et al. were the subject of an Appeal for which Appellants Brief was submitted on March 24, 2003. Immediately thereafter, the Examiner re-opened prosecution, dropped the rejections based on Klungness et al. and entered new rejections. Now, Klungness et al is used again as the primary reference, albeit in combination with new secondary references. The Examiner has recognized some inadequacies of the Klungness et al teaching with respect to the present invention, stating, "This process differs from that of the present invention in that a refiner or beater is used rather than a fluffer." Applicants respectfully submit that Klungness et al differs from the present invention in more ways than the Examiner has acknowledged. Specifically, the process of Klungness et al. differs from the present invention also at least with respect to the materials used in the process and in the manner of performing the treatment. The secondary references failed to overcome the deficiencies in the teaching of Klungness et al...

Klungness, et al. discloses the precipitation of calcium carbonate in cellulosic fibers containing about 40%-80% moisture, by mixing with the fibers from about 10% to about 40% of calcium oxide or calcium hydroxide. The process uses de-watered crumb pulp containing less moisture than the free moisture level (column 5, lines 47-49). Klungness et al. defines quite clearly the type of pulp that is used, which is de-watered crumb pulp. In column 5 beginning at line 27 Klungness et al. defines the "free moisture level" to be the "level of moisture for a particular pulp at which free water appears on the surface". Above the free moisture level, the pulp fibers become dispersed in the water, and slurry is formed. (column 5, lines 39-41) Klungness et al. particularly and specifically states that de-watered crumb pulp is utilized "which contains less moisture than the free moisture level". Therefore, it is clear that a slurry is not used in the teaching of Klungness et al. Klungness, et al. specifically and clearly states that it is not. Accordingly, Klungness et al does not treat a fiber stock suspension because there is insufficient moisture present to form a suspension.

The use of a non-slurry not only is consistent with the teaching of the process of Klungness et al, it is described to be required to perform the process. In the paragraph beginning at column 6, line 8, Klungness et al. specifically states an intent to eliminate or minimize the presence of free surface moisture on the fibers, stating a desire that the moisture present be only that moisture that is captive within the hollow fiber interiors. Restricting the presence of moisture to the interior of the fibers is fundamental to the process of Klungness, et al. Klungness et al. theorize that, in their process, hydrostatic forces draw calcium hydroxide into the cell walls and hollow interior of the cellulose fibers, during the exothermic reaction that occurs between the calcium oxide or calcium hydroxide and the water in the cells. The reaction occurs at the surface openings of the fiber, which is the site to which the presence of water is restricted, since only

minimal surface moisture is present in crumb pulp, and no free moisture in the nature of a slurry is present. The amount and location of water is restricted, by staying below the free moisture level of the pulp, so that calcium hydroxide is drawn into the cells. Carbon dioxide is added, with mixing, and calcium carbonate is then precipitated within the cellulosic fibers. Thus, control of moisture in the pulp by minimizing surface moisture through the use of crumb pulp, and the subsequent use of direct precipitation of calcium carbonate in the cells are fundamental to the process of Klungness et al. Altering either of these is a fundamental change contrary to the teaching of Klungness et al. The present invention changes both.

Specifically then, as described in detail above, Klungness differs from the invention recited in the present pending claims in at least the following aspects:

- Klungness et al. teaches only the processing of crumb pulp containing 40-50% moisture, which is less than free moisture level.
- Klungness et al. requires the minimization of surface moisture on the pulp fibers and therefore requires that a slurry not be used.
- Klungness et al. therefore is fundamentally different than the present invention which uses a "fiber stock suspension" as recited in several process steps in claim 1 of the pending application.
- Klungness et al. relies on the precipitation of $CaCO_3$ using reactions between $CaOH_2$ and/or CaO and CO_2 or CO. The fibers are first filled with calcium hydroxide, and calcium carbonate is precipitated directly in the fibers when carbon dioxide is added. This too is fundamental to the Klungness et al. process.
- Klungness et al. therefore is fundamentally different than the present invention recited in the pending claims, which includes direct addition of $CaCO_3$.

Wu et al. discloses a readily defibered pulp product for use as fluff pulp in absorbent articles such as diapers, sanitary napkins and the like. During fluff pulp processing, hammermills are used to break up sheets of fluff pulp received from a pulp mill. To individualize a high percentage of fibers, high energy is required to break up fiber bundles. Vigorous defiberizing can also cause fiber breakage. Alternatively, chemical debonders can be used in the pulp mill prior to sheet formation, but often cause decreases in absorbency and water holding capacity. To reduce the need for chemical debonders in fluff pulps, Wu et al. proposes adding finely divided fillers to fiber surfaces to reduce fiber to fiber bonding strengths, thereby lowering defiberizing energy requirements without using conventional debonders. Thus, the high basis weight fluff pulp sheets or mats therefrom are readily defibered for subsequent production of the highly absorbent water retaining products such as diapers and sanitary napkins. Wu et al. specifically differentiates his product from paper products intended for letter, book, magazine and other papers (column 4, lines 16-18) which require greater strength. The products of the Wu et al. invention are unsized, with low tensile, burst and tear strength. The fibers are unrefined or only lightly refined (column 4, lines 28-33).

The process of Wu et al. provides surface attachment of fillers, different from the fiber loading process of the present invention, for the specific purpose of reducing fiber to fiber bonding in the pulp. This is a clearly different result than is desired from fiber filling as in the present invention. Accordingly, any low energy treatment taught by the Wu et al. process is not relevant to a fiber filling process, and Wu et al. specifically teaches that the process is not for the production of paper grades, only fluff pulp.

LaRiviere teaches an apparatus for fluffing high consistency pulp (above 18-20% consistency) which is not a slurry but described as "a damp, fibrous sold (sic) mass" (column 1, lines 32). The apparatus is used as a contactor in a gaseous bleaching process having nothing to do with fiber filling. As with Klungness et al, LaRiviere does not teach processing a slurry; and as with Wu et al., LaRiviere does not teach a fiber filling process.

It is respectfully submitted that the Examiner has cited references that are not combinable in a manner to teach the process recited in amended claim 1. Specifically, claim 1 as amended recites:

> A process of treating a fiber stock suspension for at least one of paper and cardboard production, said process comprising the steps of:
>
> providing the fiber stock suspension, with a moistened fiber material having fiber surfaces, said stock suspension having a stock pH associated therewith, said stock pH being set in an approximate range of 10 to 13;
>
> adding at least one additive to the fiber suspension, including at least $CaCO_3$;
>
> treating the fiber suspension and the at least one additive together in a fluffer operated under fiber stock fluffing conditions;
>
> separating the fiber material within said fluffer so as to increase a specific surface thereof, thereby optimizing accessibility of educts to the fiber surfaces; and
>
> passing the treated fiber stock suspension to a paper machine and producing the at least one of paper and cardboard with the treated fiber stock suspension.

Klungness et al teaches a process that uses crumb pulp, not a "fiber stock suspension" as required by claim 1, and Klungness et al requires the direct precipitation of $CaCO_3$ using a reaction in the mass of crumb pulp. Claim 1 differs therefrom by reciting adding at least $CaCO_3$ directly to the stock suspension, not the precursors therefore as required by Klungness et al. Wu

et al. teaches a process for treating fibers so as to specifically and intentionally inhibit fiber-to-fiber bonding by attaching fillers to the surface of the fibers. Wu et al. specifically acknowledges that the process disclosed therein is not appropriate for treating fibers intended for the manufacture of paper products since the fiber-to-fiber bonding is inhibited. Wu et al. individualizes fibers for the manufacture of fluff pulp. Claim 1 as amended specifically recites a suspension for making paper or cardboard, and recited passing the treated stock suspension to a paper machine for manufacturing paper or board products. LaRiviere also fails to teach treating a fiber stock suspension but instead "a damp fiberous mass". La Riviere does not teach a fiber filling process, but instead a gaseous bleaching process.

In summary neither Klungness et al. nor LaRiviere teach processing a slurry and neither Wu et al. nor LaRiviere teach a fiber filling process suitable for treating fibers intended for the manufacture of paper or board products. Klungness et al. relates to fiber filling, but teaches a process fundamentally different from the process recited in the present pending claims. Nothing teaches combining the individual unassociated features of the prior art processes in any way to achieve the process of the pending claims for the present invention. It is respectfully submitted the processes taught by the references are mutually exclusive in that Wu et al. specifically excludes the manufacture of paper or board products and Klungness and LaRiviere do not teach processing fiber suspensions, each instead requiring a dewatered pulp in the nature of crumb pulp.

Accordingly, Applicants submit that the invention recited in claim 1 is not taught by the cited references alone or in any combination. Applicants have discovered that a fluffer can be used in a fiber loading process to load additive into the fibers of a fiber suspension. Previously, more aggressive treatment such as by a refiner was believed to be necessary to accomplish fiber loading. Applicants have discovered a process in which fiber loading can be achieved without

otherwise substantially altering the physical characteristics of the fibers. Accordingly, applicants submit that amended claim 1 recites an invention that is patentably different from the prior art in any combination, and that claim 1 should be allowed.

Claims to 2-11 and 13-19 depend either directly or indirectly from amended claim 1. Each, therefore, includes all of the limitations of claim 1 while adding further specificity to the invention recited in claim 1. Accordingly, Applicants respectfully submit that each of claims 2-11 and 13-19 also are allowable together with claim 1 from which they depend.

For the foregoing reasons, Applicants submit that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicants respectfully request withdrawal of all rejections and allowance of the claims.

In the event Applicants have overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicants hereby conditionally petition therefor and authorize that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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